

**AMENDMENTS TO THE SPECIFICATION**

**Page 1, delete the first full paragraph and insert the following new paragraph:**

The present invention relates to an external antenna which transmits data to and receives data from ~~data~~-a non-contact integrated circuit (hereinafter sometimes referred to as "non-contact IC") placed within a case. This application is based on Japanese Patent Application No. 2003-099621 filed on April 2, 2003, and the content of which is incorporated by reference.

**Page 1, delete the heading "Description of the Prior Arts" and insert --Description of the Prior Art--.**

**Page 1, delete the last full paragraph and insert the following paragraph:**

As such techniques, a technique has been known in which a rectangular cartridge memory wherein a loop-shaped antenna (hereinafter referred to as "loop antenna") is formed on the outer circumference is slanted 45° relative to the bottom surface or where two sides of the loop antenna approach two sides of the cartridge case by slanting the loop antenna 45° relative to the bottom surface (for example, see Japanese Patent Laid-Open No. 2002-140879, and Japanese Patent Laid-Open No. 11-339436). In such a technique, the data is exchanged by ~~coming~~-a loop shaped external antenna provided on a flat portion of an external device coming close to either of the two sides of the tape cartridge.

**Page 2, delete the first full paragraph and insert the following paragraph:**

However, in the prior art techniques, since only one side of the loop antenna in the external antenna ~~contributes~~<sup>is contributed</sup> to transmission/receiving with the loop antenna formed on the cartridge memory, it has been difficult to make communication quality good. Specifically, as shown in FIG. 7, at a portion near one side 61 of a substantially rectangular loop antenna 6, which is an external antenna, a magnetic field becomes parallel to a cartridge memory CM, which is diagonally placed, making it difficult to obtain binding of the magnetic field, as a result, communication cannot be performed. On the other hand, at a portion opposite one side 62 (Range A in the figure), the magnetic field becomes perpendicular to the cartridge memory CM, binding of the magnetic field required for communication can be obtained, and thus, only the side 62 ~~contributes~~<sup>is contributed</sup> to transmission/receive to the cartridge memory CM in the conventional techniques. For this reason, when such a plane type loop antenna 6, which is the external antenna, is used, the position of transmission/receiving with the cartridge memory CM is restricted, and there is also the problem that the efficiency is reduced by half. Particularly, when being communicated with a magnetic tape cartridge memory in the state where a magnetic tape cartridge is accommodated within a housing case, since a distance between the external antenna and the cartridge memory becomes large, the communication quality thereof has been desired to be enhanced.

**Page 3, delete the second full paragraph and insert the following paragraph:**

According to the present invention, there is provided an external antenna which performs transmission/receiving with a non-contact type memory diagonally placed within a case in such a manner that a loop antenna of the non-contact type memory is ~~in~~ adjacent to neighboring two surfaces of the case, the external antenna comprising a loop antenna having a route ~~in~~ adjacent to said two surfaces.

**Page 4, delete the first full paragraph and insert the following paragraph:**

~~According to the present invention, when being communicated with a non-contact type memory diagonally placed within the case, first the external antenna approaches two surfaces in adjacent to the loop antenna of the non-contact type memory. If the external antenna approaches these two surfaces, a portion in adjacent to these two surfaces amongst the external antenna becomes in adjacent to two portions (two sides in the case of a rectangular loop antenna) in adjacent to these side amongst the loop antenna within the case, whereby communication is made between the loop antenna within the case at two portions and the external antenna. This can enhance communication quality.~~ According to an aspect of the present invention, when communication is performed with a non-contact type memory diagonally placed in a case, first, an external loop antenna is moved so as to approach corner portions made by two planes of the case, where two portions of a loop antenna of the non-contact memory are adjacently placed. Then, out of the external loop antenna two portions approach the two portions of the loop antenna, respectively. This makes two portions of the external antenna more surely coupled to

the two portions of the loop antenna of the non-contact memory, respectively, with an improved communication quality.

**Page 4, delete the second full paragraph and insert the following paragraph:**

In the present invention, the antenna-~~in~~ adjacent to these two surfaces is a part of a substantially L-shaped loop antenna.

**Page 4, delete the third full paragraph and insert the following paragraph:**

According to this configuration, only when a conventionally used loop antenna is bent into an L-shape, an antenna-~~in~~ adjacent to these two surfaces can be formed. Consequently, a power required for transmitting data to the external antenna or receiving data from the external antenna can be reduced to a level not higher than the conventional electric power. Also, in this case, a transmission/receiving range (distance) can be widened.

**Page 4, delete the fourth full paragraph and insert the following paragraph:**

Furthermore, according to the present invention, when three portions of the loop antenna of the non-contact type memory are provided so as to be-~~in~~ adjacent to three surfaces of the case, one portion of the L-shaped loop antenna is in a substantially straight shape to be in adjacent to these three surfaces.

**Page 5, delete the first full paragraph and insert the following paragraph:**

According to this configuration, when being communicated with a non-contact type memory diagonally placed within the case, first the L-shaped external antenna approaches so as to cover the corner portion. When the external antenna approaches the case as described above, two sides positioned at the tips of the L-shape and one side, which is a substantially straight line, are ~~in~~ adjacent to three portions of the loop antenna in the case. Consequently, since the communication between the non-contact type memory and the external antenna are performed at three portions, the communication quality is much more enhanced.

**Page 5, delete the second full paragraph and insert the following paragraph:**

Also, the present invention is characterized in a communication method of an external antenna with a non-contact type memory diagonally placed within a case. Specifically, the present invention relates to a communication process for communicating an external antenna with a non-contact type memory diagonally placed within a case in such a manner that a loop antenna is ~~in~~ adjacent to neighboring two surfaces of the case, wherein data communication is performed by pacing the external antenna so that ~~the~~ two portions of the antenna are ~~in~~ adjacent to these two surfaces at the time of communication.

**Page 7, delete the second full paragraph and insert the following paragraph:**

The cartridge memory 2 is an electric part, the entirety~~whole~~ of which is in a substantially rectangular, thin piece state. The cartridge memory 2 is composed of a main body comprising an

IC tip (integrated circuit) (not shown) sealed in a glove top ~~21~~<sup>32</sup>, which is sealing agent made of a resin, the IC tip being wired to a loop antenna 23 printed on a substrate 22. The loop antenna 23 has a substantially rectangular shape by winding a lead line around an outer circumference of the cartridge memory 2 ~~on~~ several times. The cartridge memory 2 is diagonally placed at approximately 45° relative to a bottom 11b so that long side portions 23a and 23b, which are opposite two sides amongst sides making up the rectangular shape are ~~in~~ adjacent to a side surface 11a and bottom surface 11b, which are two neighboring surfaces of the cartridge case 11.

**Page 8, delete the first full paragraph and insert the following paragraph:**

The external antenna 4 is formed by bending a conductive antenna etched on a flexible substrate in a loop state into a substantially L-shape. By the formation of the external antenna 4 as described above, when the external antenna 4 approaches the magnetic tape cartridge 1, two sides 41, and 42 positioned at the tips of the L-shape (hereinafter simply referred to as "tip portions 41 and 42") are ~~in~~ adjacent to the side surface 11a and the bottom surface 11b. Specifically, the external antenna 4 is composed of a loop antenna having the tip portions 41 and 42, which are routes ~~in~~ adjacent to these two surfaces 11a and 11b. Furthermore, when the external antenna is placed at a prescribed position in order to be communicated with the cartridge memory, these tip portions 41 and 42 are formed so as to be substantially parallel to these long side portions 23a and 23b.

**Page 7, delete the second full paragraph and insert the following paragraph:**

As shown in FIG. 2A and FIG. 2B, the external antenna 4 is formed so that the centers of the tip portions 41 and 42 in the width direction are accorded with the centers of the long side portions 23a and 23b in the width direction, respectively. Furthermore, the tip portions 41 and 42 are formed so that each has a width larger than that of long side portions 23a and 23b. By forming the tip portions 41 and 42 as just mentioned, the lines of magnetic force generated around the tip portions 41 and 42 surround the long side portions 23a and 23b. Specifically, the lines of magnetic force generated by the external antenna 4 enter into the loop antenna 23 of the cartridge memory in a larger amount. It is noted that for the convenience of the explanation, FIG. 2 omits the glove top 21 of the cartridge memory and the like in FIG. 1, and only shows the loop antenna 23 and the external antenna 4.

**Page 9, delete the last full paragraph and insert the following new paragraph:**

Since the long side portions 23a and 23b of the cartridge memory are adjacent to the tip portions 41 and 42 of the external antenna, an amount of the line of magnetic field is increased in comparison with the conventional case, a quality of communication with the cartridge memory 2 diagonally placed can be enhanced. Furthermore, since the communication quality can be enhanced as described above, even in the case where a communication distance between the cartridge memory 2 and the external antenna 4 is increased by accommodating the magnetic tape cartridge 1 within the housing case 3, the management of the magnetic tape

cartridge 1 can be carried out in a good manner by effectively utilizing information within the cartridge memory 2.

**Page 11, delete the first full paragraph and insert the following new paragraph:**

As shown in FIG. 4, in an external antenna 5, one of the external antenna 4 according to the first invention having been bent into a substantially L-shape is formed into a substantially straight line as a linear~~linear~~ portion 51. The linear~~linear~~ portion 51 is formed as a side portion so as to be substantially parallel to a short side portion 23c of the loop antenna 23 formed on the cartridge memory 23 diagonally placed within the cartridge case 11.



**Page 11, delete the second full paragraph and insert the following new paragraph:**

The cartridge memory 2 is placed in a corner of the cartridge case 11 in such a manner that three sides, i.e., the long side portions 23a and 23b, and the short side portion 23c are ~~in~~ adjacent to three sides of the cartridge case 112, i.e., the side surface 11a and the bottom surface 11b, and a side surface 11c perpendicular thereto. The linear portion 51 of the external antenna 5 is formed so that when the external antenna 5 is ~~in~~ adjacent to three surfaces 11a to 11c of the cartridge case 11, the center of the linear portion 51 in the width direction is accorded with the center of the short side portion 23c in the thickness direction, and the width of the linear portion 51 formed is larger than the thickness of the short side portion 23c. By forming the linear portion 51 as described above, the line of magnetic force generated around the linear portion 51 surrounds short side portion 23c, increasing the magnetic line entering in the loop antenna 23.

**Page 12, delete the third full paragraph and insert the following paragraph:**

Since three sides 23a to 23c are ~~in~~ adjacent to the tip portions 41 and 42 and the linear portion 51 of the external antenna, the line of the magnetic field passing within the loop antenna 23 is increased in comparison with the conventional case, greatly~~much more~~ enhancing the communication quality.

**Page 12, delete the fourth full paragraph and insert the following paragraph:**

While the embodiments of the present invention have been described, ~~but~~ it should be noted the present invention should not be restricted thereto, and various modifications~~modification~~ can be made.

**Please delete the present Abstract of the Disclosure.**

**Please add the following new Abstract of the Disclosure:**

A cartridgeCartridge memory 2 is diagonally placed so that two sides ~~23a and 23b~~ of a loop antenna 23 of the cartridge memory 2 are in adjacent to two neighboring surfaces ~~11a and 11b~~ of a cartridge case 11. An external antenna 4 has two tip portions ~~41 and 42~~ in adjacent to these two surfaces ~~11a and 11b~~. Such an external antenna can enhance communication with a cartridge memory diagonally placed within a magnetic tape cartridge.